

REMARKS

Claims 1-2 were originally presented in the subject application. Claims 1 and 2 were amended, and claims 3-8 added, in a response dated September 25, 2007. Claims 1 and 3 were amended in a response dated June 12, 2008. Claims 1 and 3 were amended in a response dated January 9, 2009. No claims have herein been amended, added or canceled. Therefore, claims 1-8 remain in this case.

Applicants respectfully request reconsideration and withdrawal of the sole ground of rejection.

Reply to Response to Arguments

In the "Response to Arguments" section of the final Office Action, attention is drawn to Applicants' (alleged) Admitted Prior Art (AAPA) mentioning that IDMA is a special form of CDMA. However, Applicants submit that this part of the AAPA must be taken in context. IDMA being a special case of CDMA is from a purely theoretical and mathematical point of view. However, the two are completely different from a technology point of view (and, hence, from the viewpoint of one skilled in the art), because CDMA employs spectrum spreading whereas IDMA employs chip interleaving. Consequently, for a mathematician, IDMA may be considered a special case of CDMA, only because, mathematically speaking, spectrum spreading is a kind of coding and chip interleaving is another kind of coding. However, for one skilled in the art, chip interleaving is definitely very different technically from spectrum spreading in implementation. Therefore, the AAPA statement that "IDMA is a special case of CDMA" cited in the final Office Action can only fairly be treated as a theoretical classification and not as a technological classification. The contention that, as IDMA is a special form of CDMA, it is obvious that IDMA inherits the teachings of CDMA is therefore not technologically valid.

The specification at paragraphs 0011 and 0013, part of the alleged AAPA, teaches that, at least theoretically, unequal power allocation could be effective for CDMA systems **if multi-user detection is used**. It also teaches that multi user detection has been generally regarded as too complicated to be used in practice in CDMA systems. It can also be seen that AAPA, like

Nakamura, teaches a CDMA system when discussing power allocation. Therefore, Applicants submit that AAPA, whilst acknowledging the theoretical possibility of using unequal power allocation in CDMA systems, actually guides one of ordinary skill away from using this technique even in CDMA systems, because its use is conditional on the presence of multi-user detection in the CDMA system. Applicants submit this simply clarifies what one of ordinary skill would already know, namely, that multi-user detection in CDMA systems is generally regarded as too complicated to be of practical use. Thus, Applicants submit that one of ordinary skill taking account of Nakamura and AAPA, would not seriously contemplate applying unequal power allocation in an IDMA system, let alone doing so in a CDMA system.

Furthermore, the alleged combination of AAPA and Nakamura does not make obvious a pre-calculated arrival power level being assigned to each user where the IDMA signal would be transmitted to the user using the assigned pre-determined arrival power level. AAPA only mentions the theoretical possibility of using unequal power allocation in a CDMA system, but does not actually disclose or suggest that it is applicable to an IDMA system. Therefore, even if one assumed for the sake of argument that the combination of AAPA and Nakamura teaches the theoretical possibility of unequal power allocation in a CDMA system, it is conditional on the CDMA system including multi-user detection.

35 U.S.C. §103 Rejection

The final Office Action rejected claims 1-4 and 6 and 8 under 35 U.S.C. §103(a), as allegedly obvious over “Applicants’ Admitted Prior Art” (U.S. Patent Application Serial No. 10/711,034) in view of Nakamura et al. (U.S. Patent No. 5,920,554). Applicants respectfully, but most strenuously, traverse this rejection.

Amended claim 1 recites a method for IDMA signal transmission. The method comprises assigning a code to each user, where the code can be the same or different for different users and of the same or different rates for different users. The method further comprises encoding a source data sequence to create a coded source data sequence for each user using an encoder assigned to that user, and interleaving each coded source data sequence so as to modify an order of the coded source data sequence to produce an interleaved data sequence, wherein

interleaved data sequences from different users are distinguished by using different interleaving schemes. The method further comprises assigning a pre-calculated arrival power level to each user, wherein the arrival power level is different for at least some users, and transmitting an IDMA signal comprising the interleaved data sequence for each user using the assigned pre-calculated arrival power level for that user.

The “Response to Arguments” section of the final Office Action alleges that, since IDMA can be regarded as a special form of CDMA (see Applicants’ remarks above), it is obvious that IDMA inherits the teachings of CDMA with further additions and/or modifications to provide the IDMA system. Therefore, the final Office Action argues, the combination of the references make obvious to port the concepts of CDMA systems into an IDMA system.

Applicants submit this reasoning is seriously flawed. Its underlining presumption is that IDMA comprises nothing more than logical modifications of CDMA and that it is therefore compatible with CDMA. However, this ignores the reality. IDMA uses chip interleaving whereas CDMA uses spectrum spreading. This is one significant technical difference which does not make IDMA compatible with CDMA. Thus, it is not proper to argue that any modification taught with respect to a CDMA system can be obviously applied to an IDMA system. Applicants submit one must first demonstrate that what is proposed to be modified in the IDMA system is in fact technically compatible with the corresponding feature of the CDMA system and consequently that the modification taught with respect to the CDMA system can then be technically applied without undue experimentation or effort in the IDMA system. Such has not been done. Further, in the case of power allocation, this is not true of CDMA and IDMA systems. AAPA confirms that unequal power allocation is theoretically possible in a CDMA system, but conditional on there being multi-user detection in the system. However, it further teaches that multi-user detection is extremely complex and thus impractical. Applying the logic of the final Office Action, one of ordinary skill having the disclosure of AAPA would firstly not seriously contemplate applying unequal power allocation to IDMA (or even CDMA) because, in doing so, he would be compelled by the teaching of AAPA to use a complex multi-user detection technique knowing in advance that such technique is complicated and generally impractical.

More particularly, the final Office Action alleges in section 4 that AAPA teaches all of the features of claim 1 save for the features of (1) *“assigning a pre-calculated arrival power level to each user,”* (2) *“wherein the arrival power level is different for at least some users,”* and (3) *“using the pre-calculated arrival power level for that user”* – when transmitting an IDMA signal to that user – (notations (1) to (3) added for convenience). The final Office Action goes on to allege that Nakamura (U.S. Patent No. 5,920,554) teaches at column 5, lines 62 to 67, the feature of “assigning a pre-calculated power level to each user.” Furthermore, the final Office Action alleges that AAPA teaches at paragraph 11, lines 6 to 9 (referring to the specification of the present patent application) the feature that the arrival power level can be different for at least some users. Therefore, the final Office Action alleges, by a combination of AAPA and Nakamura, it is obvious that a pre-calculated arrival power level can be assigned to each user where the user will transmit the IDMA signal using the assigned pre-determined arrival power level, where the power level is different for at least some users. Thus, the final Office Action concludes that independent claims 1 and 3 as presently on file are obvious. Applicants disagree with this assessment for the reasons already presented in the previous response of January 9, 2009, but make the following further observations.

Firstly, it is noted that the sum of the features identified by the final Office Action in Nakamura and AAPA does not provide the whole of the subject matter of features (1) to (3) identified above. Therefore, on this basis alone, the combination of Nakamura and AAPA does not teach all of the recited limitations of claim 1.

Secondly, as previously remarked, Nakamura teaches a CDMA system and it should be carefully noted that the part of AAPA referred to in the final Office Action as allegedly discussing different arrival power levels for at least some users is actually referring to a CDMA system. Therefore, even if the respective teachings of Nakamura and AAPA were combined as alleged, it does not lead to the feature of unequal power assignment in an IDMA system. Therefore, once again, the combination of Nakamura and AAPA does not teach all of the claims limitations as neither makes any disclosure or suggestion of using unequal arrival powers in an IDMA system. This latter point appears to be implicitly acknowledged in the final paragraph of section 2 of the final Office Action where it is alleged that IDMA is a special case of CDMA.

Nakamura teaches at column 5, lines 62 to 67 the feature of power amplifying an up-converted analog transmission signal which has been subjected to spectrum spreading into a wide-band signal (column 1, lines 56 to 58) to a pre-determined transmission power level. Nakamura teaches nothing per se about controlling arrival power levels and teaches nothing that is inconsistent with the discussion at paragraph 11 of the specification of the present application, discussing the fact that equal power control has been used in CDMA systems to ensure that signals from different users have equal power when they arrive at the receivers. In other words, there is nothing remarkable in the disclosure of Nakamura and, in particular, at column 5, lines 62 to 67 of this reference. Nakamura teaches providing a mobile station apparatus in which an analog transmission signal is power amplified to a predetermined transmission power level whereby the signal is transmitted from an antenna of the mobile station apparatus at the predetermined transmission power level. There is no mention in Nakamura of assigning a pre-calculated arrival power level to each user. Even if one assumed Nakamura teaches the feature of assigning a pre-calculated transmission power level to a user, this is not the same thing at all as “*assigning a pre-calculated arrival power level to each user*” as claimed.

Consequently, Applicants submit the assertion that the combination of AAPA and Nakamura makes it obvious to assign a pre-calculated arrival power level to each user does not follow. Nakamura is concerned with a pre-determined transmission power level whereas AAPA merely mentions that the arrival power level can be different for at least some users in a CDMA (not IDMA) system. Putting these teachings from Nakamura and AAPA together does not enable one to conclude that it is obvious to “*assign a pre-calculated arrival power level to each user,*” because it does not explain how one skilled in the art would modify the pre-determined transmission power level method taught by Nakamura using the alleged hint from AAPA that the arrival power level can be different for at least some users. It is technically feasible that different arrival power levels for at least some users may result by simply assigning each user a same pre-determined transmission power level as taught by Nakamura. Consequently, the combination of AAPA and Nakamura does not inevitably lead to the claim feature of “*assigning a pre-calculated arrival power level to each user, where the arrival power level is different for at least some users.*” At a minimum, Applicants submit this limitation of the claims as currently

pending is not taught or suggested by the combination of AAPA and Nakamura, notwithstanding the fact that neither mentions using unequal power allocation in an IDMA system.

In summary, Applicants submit that Nakamura teaches at most assigning a pre-determined power transmission level to a user in a CDMA system. Consequently, if one combined the disclosure of Nakamura with AAPA, it would lead one of ordinary skill to assign a predetermined power transmission level to a user in a CDMA system.

Applicants also submit that one of ordinary skill, taking a proper and reasonable consideration of the disclosure of AAPA, would not seriously contemplate applying an unequal power allocation to even a CDMA system, given that this is conditional on the presence of multi-user detection in such system and it is common knowledge in the art that multi-user detection in CDMA systems is very complicated and impractical.

Therefore, for at least the reasons noted above, Applicants submit that claim 1 cannot be made obvious over “Applicants’ Admitted Prior Art” in view of Nakamura.

Claim 3 includes aspects similar to those argued above with respect to claim 1. Thus, Applicants submit that the remarks above apply equally to claim 3. Therefore, Applicants submit that claim 3 cannot be rendered obvious over “Applicants’ Admitted Prior Art” in view of Nakamura.

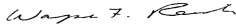
CONCLUSION

Applicants submit that the dependent claims not specifically addressed herein are allowable for the same reasons as the independent claims from which they directly or ultimately depend, as well as for their additional limitations. In addition, Applicants do not acquiesce to any allegation or characterization in the final Office Action, including “well-known in the art” or similar allegations or characterizations or that may have been made in the final Office Action. Further, unless specifically set forth otherwise, Applicants request proof of any such allegations or characterizations in the form of properly cited prior art or other allowed evidence.

For all the above reasons, Applicants maintain that the claims of the subject application define patentable subject matter and earnestly request allowance of claims 1-8.

If a telephone conference would be of assistance in advancing prosecution of the subject application, Applicants' undersigned attorney invites the Examiner to telephone him at the number provided.

Respectfully submitted,



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